



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/512,030	06/21/2005	Tito Bacarese-Hamilton	2006571-0003	2254
24280 7590 03/17/2010 CHOATE, HALL & STEWART LLP TWO INTERNATIONAL PLACE BOSTON, MA 02110				
EXAMINER NUR, ABDULLAH				
ART UNIT 2886		PAPER NUMBER		
NOTIFICATION DATE 03/17/2010		DELIVERY MODE ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@choate.com

Office Action Summary

Application No.

10/512,030

Applicant(s)

BACARESE-HAMILTON ET AL.

Examiner

ABDULLAHI NUR

Art Unit

2886

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on communication filed on 2/11/2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7, 8, 10, 13-25 and 27-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7, 8, 10, 13-25 and 27-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 2/11/2010
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

The Information Disclosure Statements

The prior art cited in the information disclosure statements filed on 1/25/2007 has been considered.

Response to Arguments

Applicant's arguments filed on 11/23/2009 with respect to claims 1-29 is acknowledged

Applicant's arguments with respect to claims 1-29 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 7, 10, 13-15, 22-25 and 27-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Stumbo et al. (US Patent # 6,310,687 B1) [hereinafter Stumbo].

As to claims 1, 7, 10 and 27, Stumbo teaches a device for analyzing fluorescent signals emitted from fluorescently labeled material bound to a microarray assay of the type having at least one microspot deposited on a substantially flat surface (column 11, lines 25-34; Fig.5A), the device comprising: an illuminator (118, Figs. 4 and 5A) for illuminating the fluorescently labeled material at an appropriate wavelength to induce

fluorescence; a detector (116, Figs. 4 and 5A) for detecting fluorescent signals emitted by the fluorescently labeled material; a signal processor (column 7, lines 62-63) for processing the signals detected; an optical system having an excitation optical path and a detection optical path, at least a portion of the excitation and detection optical paths being substantially coaxial (Fig.5A); a polarizing filter positioned in the excitation optical path and a second polarizing filter positioned in the detection optical path and orientated at right angles to the first polarizing filter such that the two filters comprise crossed polarizers positioned in the excitation and the detection optical paths respectively (414, 432, Fig.11; column 13, lines 17-20); the illuminator comprising a light emitting diode (LED) (column 8, lines 36-38) arranged to illuminate the material with incoherent illumination and to simultaneously illuminate all, or a substantial portion of at least one microspot.

As to claim 2, Stumbo teaches all as applied to claim 1, and in addition teaches the excitation filter positioned in the excitation optical path to filter out longer wavelengths emitted by the LED before they reach the material to be analyzed (column 9, lines 17-20; column 9, lines 30-31).

As to claim 3, Stumbo teaches all as applied to claim 2, and in addition teaches the excitation filter comprising a short band pass interference filter (column 9, lines 30-31).

As to claim 4, Stumbo teaches all as applied to claim 1, and in addition teaches the emission filter positioned in the detection optical path to filter out any directly reflected illumination from the material (column 13, lines 63-65).

As to claim 5, Stumbo teaches all as applied to claim 1, and in addition teaches the substantially flat surface comprising a glass slide (column 11, lines 45-55; column 2, line 4).

As to claim 13, Stumbo teaches all as applied to claim 1, and in addition teaches the oscillating electrical source driving the light emitting diode such that the intensity of light from the diode is modulated in time (column 9, lines 2-12).

As to claims 14,15 and 22, Stumbo teaches all as applied to claims 1 and 10, and in addition teaches the microspots deposited in an array on the substantially flat surface (column 11, lines 25-34; Fig.5A).

As to claim 23, Stumbo teaches all as applied to claim 10, and in addition teaches placing an excitation filter in an excitation optical path between the LED and the at least one microspot, the excitation filter substantially preventing longer wavelengths emitted by the LED from reaching the at least one microspot (column 9, lines 30-31).

As to claim 24, Stumbo teaches all as applied to claim 10, and in addition teaches placing a short band pass interference filter between the LED and the at least one microspot (column 9, lines 30-31).

As to claim 25, Stumbo teaches all as applied to claim 10, and in addition teaches placing an emission filter in a detection optical path between the at least one microspot and the optical detector, the emission filter substantially preventing any illumination directly reflected from the sample from reaching the detector (column 13, lines 63-65).

As to claims 28 and 29, Stumbo teaches all as applied to claims 1 and 10, and in addition teaches the dichroic beam splitter located in the excitation and detection optical paths (column 11, lines 5-6; Fig.5A).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stumbo in view of Cunningham et al. (US 2003/0027327 A1) [hereinafter Cunningham].

As to claims 16-19, Stumbo teaches all as applied to claim 1. Stumbo is silent to illuminating an area at the location of the microspot having a diameter between about 50 microns and about 450 microns.

Cunningham teaches an optical detection wherein one or more specific binding substance can be arranged in an array of distinct locations. The distinct locations can define a microarray spot of about 50-500 microns in diameter (paragraph 0015). This is done in order to analyze sample at distinct locations in a microarray slides.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to illuminate areas of interest in a microarray spot as taught by Cunningham in order to analyze samples at distinct locations in a microarray slides.

Claims 8 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stumbo in view of Carter et al. (US Patent # 4,508,832) [hereinafter Carter].

As to claims 8 and 21, Stumbo teaches all as applied to claims 1 and 10. Stumbo is silent to the signal processor comprising a phase sensitive detector.

Carter teaches means for measuring optical change in immunoassay comprising a phase sensitive light detector 8 in order to provide phase sensitive detection enabling a great reduction in background noise (column 7, line 66 to column 8, line 10).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a light sensitive detector into the invention of Stumbo in order to provide phase sensitive detection enabling a great reduction in background noise.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stumbo in view of Chou et al. (US Patent # 6,327,037 B1) [hereinafter Chou].

As to claim 20, Stumbo teaches all as applied to claims 1 and 10. Stumbo is silent to the signal processor comprising a lock-in amplifier combined with a voltage meter.

Chou teaches a detector 21, such as voltmeter or a lock-in amplifier connected a signal processor 17, in optical detection mechanism, in or detect the amplitude of optical heterodyne inference output with a fixed beat frequency (column 4, lines 25-45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a lock-in amplifier and voltmeter to the detection mechanism of Stumbo in order to enhance detection resolution.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Abdullahi Nur whose telephone number is **571 270 1298**. The examiner can normally be reached on Monday through Friday, 8am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tarifur Chowdhury, can be reached on **571 272 2887**. The fax phone number for the organization where this application or proceeding is assigned is **571 273 8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A.N./

Abdullahi Nur
Patent Examiner,
Art Unit 2886

/TARIFUR R CHOWDHURY/

Supervisory Patent Examiner, Art Unit 2886